

WHAT IS CLAIMED IS:

1. A method of producing a photovoltaic device,  
comprising steps of:

forming a zinc oxide layer on a substrate at  
5 least by electrolytic deposition;

subjecting the zinc oxide layer to any one  
treatment selected from the group consisting of  
plasma treatment with a rare gas or nitrogen gas, ion  
irradiation, light irradiation and electromagnetic  
10 irradiation; and

forming on the zinc oxide layer a semiconductor  
layer comprising a non-single crystal silicon  
material containing hydrogen and having at lease one  
p-i-n junction.

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2. The method of producing a photovoltaic device  
according to claim 1, wherein the treatment is a rare  
gas plasma treatment using at least one rare gas  
selected from the group consisting of He, Ne, Ar, Kr  
20 and Xe.

3. The method of producing a photovoltaic device  
according to claim 1, wherein before forming the zinc  
oxide layer, another zinc oxide layer is formed on  
25 the substrate by sputtering and used as an underlying  
layer.

4. The method of producing a photovoltaic device according to claim 1, wherein the average thickness of the zinc oxide layer is from 10 nm to 5  $\mu$ m inclusive.

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5. The method of producing a photovoltaic device according to claim 1, wherein the zinc oxide layer transmits 50% or more of light with a wavelength of 800 nm.

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6. The method of producing a photovoltaic device according to claim 1, wherein the zinc oxide layer has a resistivity lower than that of a p- or n-type semiconductor layer provided adjacent to the zinc oxide layer.

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7. The method of producing a photovoltaic device according to claim 1, wherein an adsorption preventive layer is provided between the zinc oxide layer and a p- or n-type semiconductor layer provided adjacent to the zinc oxide layer.

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